Previously mentioned in Rio Grande do Sul from Taquara and Pedras Brancas by Ihering (1899), Osório and Viamão by Camargo (1962) and Poço das Antas and Porto Alegre by Gliesch (1930). Belton (1985) limited the distribution of *C. cucullatus* between the northern littoral and the eastern end of the central trough (an area that covers the above mentioned localities) and additionally cited that Kaempfer found it in the southeastern hills, marking on his species map (Belton 1985: 89) two points south of 31°S without precise localities. Belton (*in litt.* 1995) informs us that one of the points (north of Pelotas) represents a site west of São Lourenço, at 122 m altitude, not mentioned by Naumburg (1935), where two specimens (nos. 321984 and 321985 housed in the American Museum of Natural History) were collected by Kaempfer on 14–15 October 1931, and that the other one (southwest of Pelotas) represents Ihering's (1899) citation for Serra do Herval. However, the Serra do Herval where Ihering heard this species is located north of 31°S, being the eastern watershed of the southeastern hills between the Rio Camaquã and Rio Jacuí, as indicated in his former works on Rio Grande do Sul's natural history (Ihering 1891, 1892). Therefore, Belton's interpretation of Ihering's citations is erroneous and clearly refers to the grassy hills around Herval (32°02′S, 53°24′W), a town located in the savanna domain (*sensu* Brasil 1986). Probably the distribution of *C. cucullatus* does not extend south of 31°40′S, coinciding with the limits of the originally forested region.

RED-RUFFED FRUITCROW *Pyroderus scutatus*

On 3 and 29 February 1995 we recorded two individuals at Arroio Cadeia and later found it regularly throughout the year at Arroio Andrade in numbers varying from one to five birds. Local residents informed us that in September and October groups of four or five individuals are seen in display, vocalizing intensely from the canopy. The nearest previous records and accepted southern limit for the species are Taquara (Ihering 1899) and Poço das Antas (Gliesch 1930), both located more than 250 km to the north of our study site. Besides these, Belton (1985) mentioned only two additional localities in Rio Grande do Sul with records of *P. scutatus*: Turvo state reserve and Garruchos.

CHESTNUT-HEADED TANAGER *Pyrrhocoma ruficeps*

We found this tanager only in four forest remnants: Arroio Andrade (up to three pairs), Arroio Cadeia (one pair), Arroio dos Porcos (three individuals) and Parque Farroupilha (male seen on 2 November 1993). Previously known in Rio Grande do Sul from Ihering's (1899) record for Taquara, Gliesch's (1930) for Santo Ângelo and Camargo's (1962) for Farroupilha. According to Belton (1985), the distribution of *P. ruficeps* covers forests north of 30°S and east of 54°W, and across the state north of 28°30′S (being absent from the highest areas of the extreme northeast), with a record from the southeastern hills near Santana da Boa Vista. Our records extend the known distribution of this tanager *c.* 100 km to the south.

RUBY-CROWNED TANAGER *Tachyphonus coronatus*

Recorded in all forest fragments studied, including Cerro das Almas. We also recorded it on two occasions at sea level, in swampy forests at Pontal da Barra marsh. These records extend the species' known distribution by *c.* 250 km to the south, since it was previously known only from localities north of the central trough: Taquara (Ihering 1899), Nova Wurtemburg (Pinto 1944), Osório (Camargo 1962) and along the escarpment from Torres to the upper Rio Jacuí, thence north to the Rio Uruguai and downstream to Garruchos (Belton 1985).

VIOLACEOUS EUPHONIA *Euphonia violacea*

On 28 February 1995 a male was seen in a mixed-species flock with *Heliobletus contaminatus* and *Tangara preciosa* at mid-level in the Arroio Cadeia forest. Previously known in Rio Grande do Sul from Taquara (Ihering 1899), Porto Alegre (Gliesch 1930, Camargo 1962) and Novo Hamburgo (Pinto 1944). Belton (1985) recorded it from the foot of the escarpment in the northeast and once near Garruchos. The nearest previous record is located *c.* 180 km to the north of our study site.

GREEN-THROATED EUPHONIA *Euphonia chalybea*

We first recorded a pair of this euphonia at Arroio dos Porcos on 12 December 1994 and later saw three individuals (a male and two females) at Arroio Andrade on 28 May 1995. Mentioned from Taquara by Ihering (1899), Poço das Antas by Gliesch (1930) and Novo Hamburgo and Nova Wurtenburg by Pinto (1944). According to Belton (1985) this species is uncommon near the southern escarpment and in scattered localities of the north-central region. Our records extend the known distribution of *E. chalybea c.* 200 km southwards.

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Addresses: Giovanni N. Maurício, Rua Gonçalves Chaves 3448, 96015-560 Pelotas, RS, Brasil. Rafael A. Dias, Rua Celso Sellas 56, 96055-810 Pelotas, RS, Brasil.

Notes on the biology of two threatened species of *Bangsia* tanagers in northwestern Colombia

by F. Gary Stiles

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The genus *Bangsia* includes five species of chunky, thick-billed, rather short-tailed and strong-legged, medium-sized (body mass 35–45 g) tanagers. All of the species occur in very wet primary to lightly disturbed forests in upper tropical and subtropical life zones and all have restricted geographic distributions, making them potentially vulnerable to deforestation (Hilty 1985, Collar *et al.* 1992). The most threatened and least known species of the genus are undoubtedly the Black-and-Gold Tanager *B. melanochlamys*, and the Gold-ringed Tanager *B. aureocincta* (Isler & Isler 1987, Ridgely & Tudor 1989, Collar *et al.* 1992), both endemic to northwestern Colombia.

B. melanochlamys had been recorded previously from two small areas some 150 km apart, on opposite sides of the Cauca valley: the northwestern tip of the Central Andes between 1500 and 2385 m in the Department of Antioquia, and the southern and western slopes of

Cerro Tatamá on the Pacific slope of the Western Andes between 1000 and 2150 m, near the junction of the Departments of Valle del Cauca, Chocó and Risaralda. In the former area, at least 25 specimens were collected between 1914 and 1948, but the region has since been severely deforested and there are no recent records; this population is feared to be extinct (Hilty 1985, Collar *et al.* 1992). There are a number of specimens and two recent (1987) records from the area of Cerro Tatamá: a specimen taken at 1000 m, and a sighting of one individual (in several days of field work) at *c.* 1500 m (Collar *et al.* 1992, Pearman 1993), the latter providing the only information on the species in life. Available information on *B. aureocincta* was even more scanty: the species was known from just four specimens taken between 1909 and 1946 at three localities between 2040 and 2195 m in the same area of Cerro Tatamá as the previous species; aside from the habitat notation of "wet mossy forest" on a specimen label, nothing was known of its natural history.

This paper presents field observations on the behaviour and ecology, measurements and weights of both species that greatly augment previous information. These data were obtained in the course of a biological inventory of northwestern Risaralda Department carried out between 1991 and 1993 by personnel of the Instituto de Ciencias Naturales through a contract with the Corporación Autónoma Regional de Risaralda (CARDER); further data on the avifauna are given by Stiles (1992). Observations were made with 10 × 25 binoculars; birds captured in mist nets were measured with dial calipers or (wing chord, tail length) a millimeter rule (precision 0.1 or 0.5 mm, respectively; see Baldwin *et al.* 1931 for techniques) and weighed to the nearest 0.1 g with "Pesola" spring balances.

Observations were made at the following sites: (1) Finca El Empalado, 9 km N Mistrató: a large (>100 ha) patch of forest just northwest of the divide between the Pacific and Cauca Valley slopes of the Western Andes between *c.* 1600 and 1800 m, headwaters of the Quebrada Sutú; lightly high-graded forest on steeply sloping terrain, with abundant epiphytes and moss, frequent mist and high rainfall: 28 March–3 April 1992. (2) Finca La Argentina, *c.* 4 km SSW San Antonio del Chamí and 3 km NW of El Empalado at a lower elevation (1250 m) in the drainage of the Quebrada Sutú; a smaller patch (*c.* 5 ha) of more heavily disturbed forest, connected to the previous site by a narrow strip of forest along the stream; observations by Sandra Arango, 1–4 April 1992. (3) Alto de Pisones, a mountain ridge 16 km E San Antonio del Chamí and 9 km by trail NW Geguadas, a small village overlooking the Río San Juan; observations were made in nearly pristine cloud forest between 1400 and *c.* 1850 m, 28 May–7 June 1992 and 12–17 April 1993. A more detailed description of the vegetation is given by Salaman & Stiles (1996); the avifauna is treated in more detail by Stiles (1992 and in prep.).

Bangsia melanochlamys

At El Empalado, this species was fairly common (5–10 sightings daily) in forest canopy and along the forest edge on steep slopes. Individuals or presumed pairs frequently accompanied mixed flocks of

tanagers (*Tangara* spp., *Anisognathus* spp., *Chlorospingus semifuscus*, *Chlorochrysa phoenicotis*) and other species in the canopy and subcanopy, although I more often saw individuals or pairs by themselves, especially at fruiting *Miconia* trees. On one occasion, my attention was drawn to a bird hopping and calling excitedly with sharp *tsip* notes in a high, exposed treetop; it suddenly dived into cover an instant before a small hawk (*Accipiter collaris*) arrived at the same perch. On 30 March 1992, I observed an individual, evidently a female, repeatedly carrying moss, fibres and leaf petioles into a mass of bromeliads in the fork of a tree trunk 8 m above ground at the edge of a natural treefall clearing, at *c.* 1750 m. The presumed nest was hidden in the mass of epiphytes. A male was singing from an adjacent treetop while this individual worked. I captured three males with large cloacal protuberances (two collected, both with very enlarged testes) and a female with a well-developed brood patch at this site. At La Argentina, this species was observed twice, and one female with a brood patch was trapped and released.

At Alto de Pisones, I observed *B. melanochlamys* frequently between 1400 and 1650 m and occasionally to 1750 m in May–June 1992, nearly always in tall forest on steep slopes; a male sang regularly from a treetop at 1600 m. Most birds seen occupied the middle levels to the lower canopy of the forest; about half of my observations were of birds accompanying mixed flocks (typically dominated by several species of tanagers, but containing a wider variety of other species than at El Empalado), the others of birds resting or foraging alone or in pairs. I also noted two family groups (a pair with one or two full-grown, begging juveniles) in the upper understorey. In a net set along the ridge crest at 1730 m, I captured and collected a young male (testes very small, skull 10% ossified), probably recently independent, and measured and released an adult male and female.

In April 1993, this species was common up to *c.* 1550 m, and relatively scarce up to 1650–1680 m. Four males were noted singing from treetops along the mule trail between 1400 and 1550 m, one at 1575 m, and one at 1650 m. Most individuals seen were in pairs, two of which were feeding more recently-fledged, stub-tailed juveniles (at 1450 and 1550 m). At most a third of the individuals seen were with mixed flocks, which on the whole were less evident than during the 1992 study period.

Birds with flocks mostly foraged for insects, gleaning in moss tufts, epiphytes, and along small to medium-sized branches, sometimes leaning far forward to scan the undersides of branches and occasionally hanging upside-down to reach an insect, fruit, or flower. Birds foraging for fruit hopped heavily and rapidly along branches, plucking fruits while perched and usually crushing them in the bill, discarding husks and larger seeds in situ. Fruits taken included those of *Cavendishia* and *Psammisia* spp. (Ericaceae), *Marcgravia* sp. (Marcgraviaceae), *Miconia* and *Topobaea* (Melastomataceae), and those of an unidentified mistletoe, as well as the arillate seeds of *Clusia*. Flowers of *Cavendishia* were sometimes plucked, crushed at the base to extract the nectar, and discarded (see also Pearman 1993). Stomachs of collected birds

contained 75–100% fruit, the remainder insects; at least one of the fledglings seen in 1993 was being fed fruit (probably *Marcgravia*).

The song of *B.melanochlamys* consists of 3–5 phrases that sound like *pit-psEEyee* or *tst-tzEEeee*, delivered rapidly and followed by a pause of several seconds before the next group. The *tst* note is staccato, the *tzEEyee* very high and penetrating, the first part with an explosive quality. The usual contact note is a sharp, staccato *tst* or *pit*; lone birds occasionally give a longer *pseee* or *pseeyee*, evidently the note described by Pearman (1993).

Bangsia aureocincta

I observed this species only at Alto de Pisones, where it was common to abundant above 1700 m, progressively less common down to *c.* 1600 m (1993) or 1530 m (1992). Most birds were seen along the main ridge (Cuchilla de Gebanía) running roughly E–W and separating the Río Agüita and Río Mistrató watersheds. On 28 May 1992, along roughly 500 m of this ridge between *c.* 1730 and 1850 m, I counted at least 16 individuals including two family groups of a pair with one or two juveniles; at two points some 300 m apart, males were singing from the lower canopy. In April 1993, I noted four singing males near or along this ridge between 1700 and 1800 m, separated by distances of *c.* 100–250 m. A female was seen carrying moss into a mass of epiphytes on a thick horizontal limb some 15 m above the ground and *c.* 50 m below the ridge crest, but the nest was completely hidden. No family groups or fledglings were seen. In general, this species seemed less numerous in the area than during the previous year, possibly because its centre of distribution had shifted to higher elevations for breeding.

Especially during the 1992 observations, this species was often associated with mixed flocks that included *Tangara* spp., *Chlorothraupis stolzmannii*, *Chlorospingus flavigularis* and/or *semifuscus*, *Chlorochrysa phoenicotis*, *Euphonia xanthogastra* as well as furnariids, woodcreepers, antwrens, barbets and other species; however, it rarely occurred in the same flocks as *B. melanochlamys*, and even at fruiting *Miconia* trees (common along the trail to Puerto de Oro above *c.* 1650 m) the two species seldom coincided in their visits (and were not observed to interact when they did so). *B. aureocincta* occurred on average slightly lower in the vegetation than *melanochlamys*, typically from the upper understorey through the midcanopy. With flocks, its foraging was mainly for insects and similar to that of *melanochlamys*: searching deliberately in moss and epiphytes, mostly along rather thick, horizontal branches. Individuals or pairs were also recorded taking fruits of *Cavendishia*, *Marcgravia*, *Guettarda* (Rubiaceae), an unidentified mistletoe and *Anthurium* (Araceae), and arillate seeds of *Clusia* and ?*Tovomita* (Guttiferae).

Between 29 May and 2 June 1992 I captured 7 individuals in mist nets set along the ridge at 1730–1750 m. An adult male and female and a subadult male were collected; two males and two females were measured and released. All individuals except one female were commencing the annual moult; the males collected had enlarged testes

TABLE 1
Measurements (mean, standard deviation, range) of *Bangsia* tanagers captured in NW Risaralda Department, Colombia, 1992–1993

	B. aureocincta		*B. melanochlamys*	
	Males (n=4)	Females (n=3)	Males (n=5)	Females (n=3)
Exposed culmen	14.03, 0.46 (13.6–14.6)	13.70, 0.26 (13.5–14.0)	13.47, 0.48 (12.9–14.0)	13.07, 0.16 (12.9–13.2)
Total culmen	18.10, 0.60 (17.2–18.4)	17.97, 0.90 (17.3–19.0)	17.55, 0.42 (17.4–18.0)	17.23, 0.25 (17.0–17.5)
Commissure width	13.80, 0.91 (12.6–14.6)	13.83, 0.42 (13.5–14.3)	11.96, 0.39 (11.6–12.6)	11.96, 0.25 (11.7–12.2)
Bill depth at nostril	8.15, 0.19 (7.9–8.3)	8.10, 0.26 (7.9–8.4)	7.75, 0.13 (7.5–8.0)	7.87, 0.15 (7.7–8.0)
Tarsus length	26.08, 0.91 (24.8–26.5)	25.87, 1.39 (24.7–27.4)	24.72, 0.94 (23.8–25.8)	24.60, 0.36 (24.3–25.0)
Wing chord	89.40, 1.04 (88.0–90.5)	84.19, 1.05 (83.0–85.0)	85.56, 1.11 (84.0–86.5)	82.30, 1.71 (80.5–83.5)
Tail length	52.42, 0.68 (51.5–53.5)	52.23, 0.75 (51.5–53.0)	45.06, 0.88 (44.0–47.0)	44.96, 1.50 (43.5–46.5)
Body mass (g)	42.05, 3.40 (39.4–46.6)	41.37, 3.15 (38.3–44.6)	38.80, 0.81 (37.7–39.4)	35.65, 0.92 (35.0–36.3)

(9 × 8 mm and 6 × 4 mm for the adult and subadult, respectively), while the females had old brood patches and the collected female had a postreproductive ovary. Stomachs of collected birds contained 70–90% fruit, mainly *Miconia*, *Cavendishia* and *Marcgravia*, the remainder insects.

The song of *B. aureocincta* consists of sharp, penetrating, high-pitched whistles or thin, watery trills *tseeuurr* delivered in groups of 3–6. The individual whistles start explosively and slur downwards; usually the first one or two are shorter than the rest. A frequently given note in situations of alarm or excitement is a short, twittering trill on a lower pitch; when moving together, individuals may maintain contact with sharp *chip* or *chit* notes, heavier than the corresponding notes of *B. melanochlamys*.

Measurements, weights and plumages

B. aureocincta is slightly larger in all measurements, but apart from this the two species are quite similar in overall proportions. In both species males have significantly longer wings than females (Mann–Whitney U-tests), but the sexes do not differ in any other measurement (save that males of *B. melanochlamys* weighed more than females, which may be an artefact of the small sample size; see Table 1).

Sexual differences in plumage in *B. melanochlamys* are too slight to be evident in the field: the head and back of the female are a slightly duller, less glossy black and the orange of the breast is loss glossy and intense. The sexes differ much more in *B. aureocincta* and, given the uncertainty regarding the adult female plumage (Isler & Isler 1987)